### **BP1500 Tech Sheet**

#### **Balboa Water Group**

Part Number: 55697-04 4kW 800 Incoloy Element 55967-03 3kW 800 Incoloy Element

55700-04 With 4kW Titanium Element 55968-03 3kW 800 Titanium Element

Compatible Plumbing Kits (Coupling nuts and seals included)

55911 2" Tailpieces (2-Speed Pump 1) 55914 1.5" Tailpieces (2-Speed Pump 1)

55912 1" Tailpiece Inserts (Circ)

One Direct Circ Pump Coupling and one 1" Tailpiece Insert

System Model: BP1500
Software ID: M100\_200

Software Version: 3.0

Hex File: BP1500\_3.hex Configuration Signature: A111A271

Eng. Project: 3333

Base PCBs / PCBA's:

Power Board: 22117\_B / 55674-01 Logic Board: 22121\_C / 55675-05

Control Panels:

TP 600 55673-03 Software Version 1.0 and later

**Auxiliary Panels** 

AX10A2 55919



User Interface and Programming Guide:

http://service.balboa-instruments.com/zz40940\_download.zip



Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2,

## **System Revision History**

Part #	EPN	Date	Originator	Changes Made
55697	2277	05-19-09	Balboa	Initial Generic Configuration
and				800 Incoloy and Titanium models
55700				Initial release
		06-09-09	Balboa	Minor corrections and clarification. Add J23 / J32 connection for Misc.
		08-01-09	BWG	Minor corrections, hardware revs and firmware update
		08-14-09	BWG	Tech Sheet update
	3297	12-01-09	BWG	Software update and configuration update (remove GFCI Test Feature)
	3333	02-09-10	BWG	Wiring Diagram Update to Rev B Power Board and Rev C Logic Board
	3333	02-17-10	BWG	Software update to Version 3.0
	3333	03-12-10	BWG	P1 Low Timeout Update. Add Setup Change Reference



## **Plumbing Fittings**





#### 2" Tailpiece kit PN 55911.

Standard 2" sockets to glue up to 2" PVC pipe.





Not Immediately Available.

#### 1.5" Tailpiece kit PN 55914.

1.5" sockets to glue up to 1.5" PVC pipe with the I.D.

Be sure to orient the fittings so that the insert is at the 12:00 position to prevent trapped air.





#### 1" Circ Pump Insert kit PN 55912.

1" barb fittings for use with 1" tubing.

Be sure to orient the fittings so that the insert is at the 12:00 position to prevent trapped air.





Not Immediately Available.

#### 1" Circ Pump Insert kit PN 55913.

One fitting for direct coupling to the threaded suction of an appropriately-sized circ pump. A 1" barb fitting for use with 1" tubing is used on the other end of the heater.

Be sure to orient the fittings so that the insert is at the 12:00 position to prevent trapped air.



### Setup 1 – As Manufactured

#### **Power Requirements:**

240VAC, 60Hz, 40A, Class A GFCI-protected service (Circuit Breaker rating = 50A max.) 4 wires (Hot–Line 1, Hot–Line 2, Neutral, Ground)

#### **System Ouputs:**

Pump 1 240VAC 2-Speed 12A max 120-minute timer for Low Speed, 15 Minutes for High Speed

This is the heater pump and must be the same voltage as the Ozone

Must deliver a minimum of 20 GPM through heater

Pump 2 240VAC 1-Speed 12A max 15-minute timer

Ozone 240VAC .5A max Uses the same relay as Pump 1 Low

Must be the same voltage as heater pump

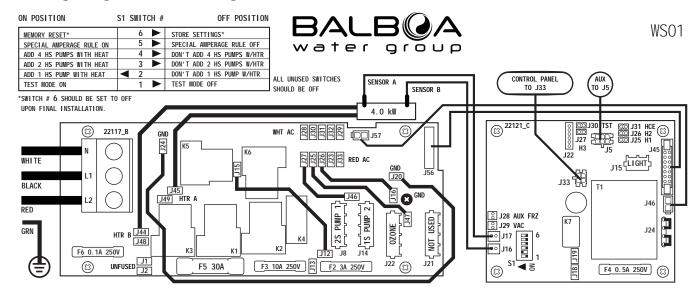
Spa Light 12VAC On/Off .25A max 4-Hour timer.

Light output is rated for LED lighting only - NOT for use with incandescent lights.

Heater 4kW @ 240VAC

Misc. J23 & J32 120VAC 4A max Hot output (Stereo). Fused equipment or in-line fuse required.

#### Wiring Diagram and Settings





Refer to Page 3 to choose a suitable Plumbing Kit.

240VAC, 60Hz, 40A, Class A GFCI-protected service (Circuit Breaker rating = 50A max.) 4 wires (Hot–Line 1, Hot–Line 2, Neutral, Ground)

#### System Ouputs:

Pump 1 240VAC 1-Speed 12A max 15-minute timer Pump 2 240VAC 1-Speed 12A max 15-minute timer

Circ Pump 240VAC 1-Speed 5A max Programmable Filtration Cycles + Polling

This is the heater pump and must be the same voltage as the Ozone

Must deliver a minimum of 20 GPM through heater

Ozone 240VAC .5A max Uses the same relay as the Circ Pump

Must be the same voltage as heater pump

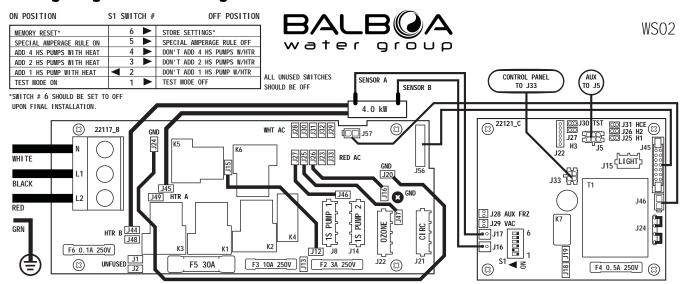
Spa Light 12VAC On/Off .25A max 4-Hour timer.

Light output is rated for LED lighting only - NOT for use with incandescent lights.

Heater 4kW @ 240VAC

Misc. J23 & J32 120VAC 4A max Hot output (Stereo). Fused equipment or in-line fuse required.

#### Wiring Diagram and Settings



# Software Configuration Changes based on Default Feature Orig. Setup 1 Changes to



Refer to Page 3 to choose a suitable Plumbing Kit.

240VAC, 60Hz, 40A, Class A GFCI-protected service (Circuit Breaker rating = 50A max.) 4 wires (Hot-Line 1, Hot-Line 2, Neutral, Ground)

#### System Ouputs:

Pump 1 240VAC 2-Speed 12A max 120-minute timer for Low Speed, 15 Minutes for High Speed

This is the heater pump and must be the same voltage as the Ozone

Must deliver a minimum of 20 GPM through heater

Blower 240VAC 1-Speed 8A max 15-minute timer

Ozone 240VAC .5A max Uses the same relay as Pump 1 Low

Must be the same voltage as heater pump

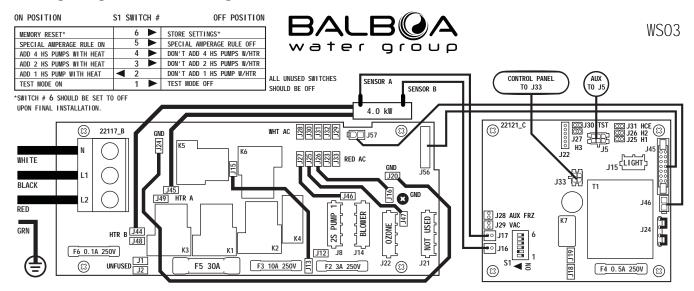
Spa Light 12VAC On/Off .25A max 4-Hour timer.

Light output is rated for LED lighting only - NOT for use with incandescent lights.

Heater 4kW @ 240VAC

Misc. J23 & J32 120VAC 4A max Hot output (Stereo). Fused equipment or in-line fuse required.

#### Wiring Diagram and Settings



# Software Configuration Changes based on Default Feature Orig. Setup 1 Changes to



Refer to Page 3 to choose a suitable Plumbing Kit.

240VAC, 60Hz, 40A, Class A GFCI-protected service (Circuit Breaker rating = 50A max.) 4 wires (Hot–Line 1, Hot–Line 2, Neutral, Ground)

#### System Ouputs:

Pump 1 240VAC 1-Speed 12A max 15-minute timer Blower 240VAC 1-Speed 8A max 15-minute timer

Circ Pump 240VAC 1-Speed 5A max Programmable Filtration Cycles + Polling

This is the heater pump and must be the same voltage as the Ozone

Must deliver a minimum of 20 GPM through heater

Ozone 240VAC .5A max Uses the same relay as the Circ Pump

Must be the same voltage as heater pump

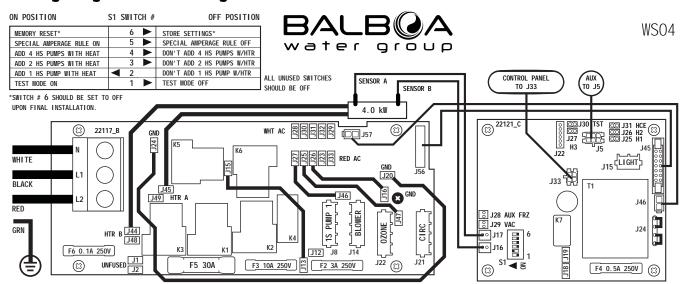
Spa Light 12VAC On/Off .25A max 4-Hour timer.

Light output is rated for LED lighting only - NOT for use with incandescent lights.

Heater 4kW @ 240VAC

Misc. J23 & J32 120VAC 4A max Hot output (Stereo). Fused equipment or in-line fuse required.

#### Wiring Diagram and Settings



## Software Configuration Changes based on Default Feature Orig. Setup 1 Changes to



Refer to Page 3 to choose a suitable Plumbing Kit.

240VAC, 60Hz, 40A, Class A GFCI-protected service (Circuit Breaker rating = 50A max.) 4 wires (Hot-Line 1, Hot-Line 2, Neutral, Ground)

#### **System Ouputs:**

Pump 1 240VAC 2-Speed 12A max 120-minute timer for Low Speed, 15 Minutes for High Speed

This is the heater pump and must be the same voltage as the Ozone

Must deliver a minimum of 20 GPM through heater

Ozone 240VAC .5A max Uses the same relay as Pump 1 Low

Must be the same voltage as heater pump

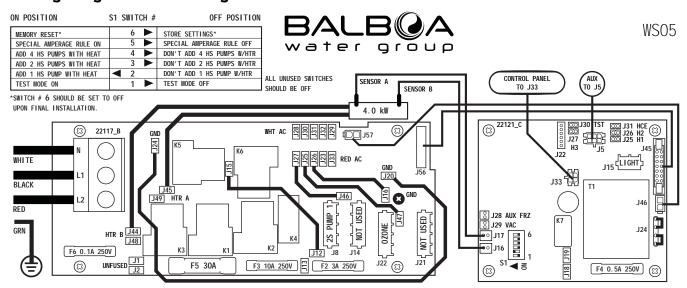
Spa Light 12VAC On/Off .25A max 4-Hour timer.

Light output is rated for LED lighting only - NOT for use with incandescent lights.

Heater 4kW @ 240VAC

Misc. J23 & J32 120VAC 4A max Hot output (Stereo). Fused equipment or in-line fuse required.

#### Wiring Diagram and Settings



# Software Configuration Changes based on Default Feature Orig. Setup 1 Changes to

J14, TP600 Button 2, LED 2, AX10A2 . . . . Pump 2 . . . . . . . . . . . . . . . . Not Used



Refer to Page 3 to choose a suitable Plumbing Kit.

240VAC, 60Hz, 40A, Class A GFCI-protected service (Circuit Breaker rating = 50A max.) 4 wires (Hot–Line 1, Hot–Line 2, Neutral, Ground)

#### System Ouputs:

Pump 1 240VAC 1-Speed 12A max 15-minute timer

Circ Pump 240VAC 1-Speed 5A max Programmable Filtration Cycles + Polling

This is the heater pump and must be the same voltage as the Ozone

Must deliver a minimum of 20 GPM through heater

Ozone 240VAC .5A max Uses the same relay as the Circ Pump

Must be the same voltage as heater pump

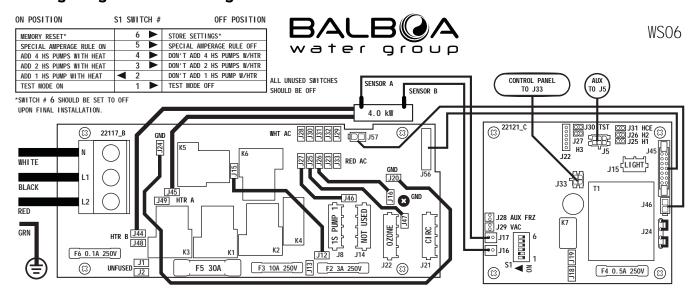
Spa Light 12VAC On/Off .25A max 4-Hour timer.

Light output is rated for LED lighting only - NOT for use with incandescent lights.

Heater 4kW @ 240VAC

Misc. J23 & J32 120VAC 4A max Hot output (Stereo). Fused equipment or in-line fuse required.

#### Wiring Diagram and Settings



# Software Configuration Changes based on Default Feature Orig. Setup 1 Changes to



Refer to Page 3 to choose a suitable Plumbing Kit.

120/240VAC, 60Hz, 16/40A, Class A GFCI-protected service (Circuit Breaker = 20/50A max.), 3 or 4 wires [hot, hot (optional), neutral, ground]. **Do not use this setup with a 3 kW heater.** 

#### System Ouputs:

Pump 1 120VAC 2-Speed 12A max 120-minute timer for Low Speed, 15 Minutes for High Speed

This is the heater pump and must be the same voltage as the Ozone

Must deliver a minimum of 20 GPM through heater

Ozone 120VAC .5A max Uses the same relay as Pump 1 Low

Must be the same voltage as heater pump

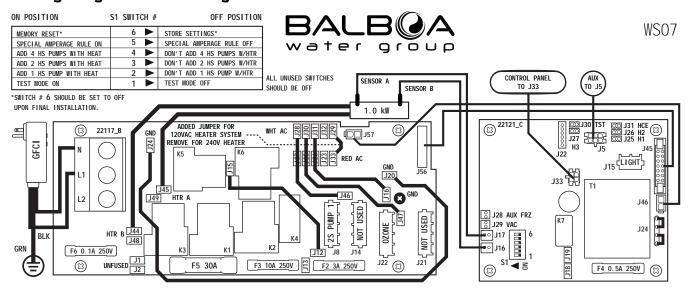
Spa Light 12VAC On/Off .25A max 4-Hour timer.

Light output is rated for LED lighting only - NOT for use with incandescent lights.

Heater 1kW @ 120VAC or 4kW @ 240VAC

Misc. J23 & J32 Not Applicable with 120V Heater.

#### Wiring Diagram and Settings



# Software Configuration Changes based on Default Feature Orig. Setup 1 Changes to

J14, TP600 Button 2, LED 2, AX10A2 . . . . Pump 2 . . . . . . . . . . . . . . . Not Used

#### 120v to 240v heater conversion instructions:

- 1, Conversion must be performed by a qualified, licensed electrician.
- 2, Disconnect from power and remove power cord.
- 3, Completely remove jumper wire between J29 and J33 and discard.
- 4, Install 240V power conductors; Line 1, Line 2 and Neutral to main terminal block (TB1)



Refer to Page 3 to choose a suitable Plumbing Kit.

120/240VAC, 60Hz, 16/40A, Class A GFCI-protected service (Circuit Breaker = 20/50A max.), 3 or 4 wires [hot, hot (optional), neutral, ground]. **Do not use this setup with a 3 kW heater.** 

#### System Ouputs:

Pump 1 120VAC 1-Speed 12A max 15-minute timer

Circ Pump 120VAC 1-Speed 1.5A max Programmable Filtration Cycles + Polling

This is the heater pump and must be the same voltage as the Ozone

Must deliver a minimum of 20 GPM through heater

Ozone 120VAC .5A max Uses the same relay as the Circ Pump

Must be the same voltage as heater pump

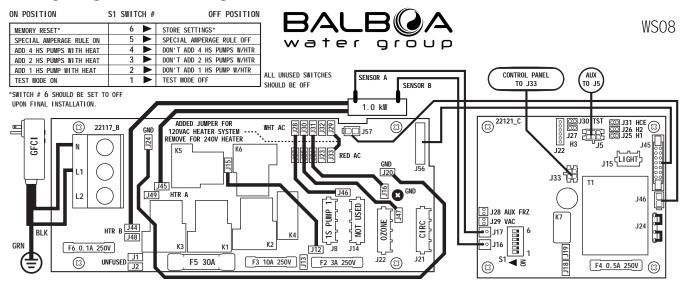
Spa Light 12VAC On/Off .25A max 4-Hour timer.

Light output is rated for LED lighting only - NOT for use with incandescent lights.

Heater 1kW @ 120VAC or 4kW @ 240VAC

Misc. J23 & J32 Not Applicable with 120V Heater.

#### Wiring Diagram and Settings



# Software Configuration Changes based on Default Feature Orig. Setup 1 Changes to

J21 . . . . . . . . . . . . Not Used (non-circ) . . . . . Circ Pump Enabled

#### 120v to 240v heater conversion instructions:

See previous page.

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water group

Refer to Page 3 to choose a suitable Plumbing Kit.

## **Setup Changes with DIP Switch 1 ON**

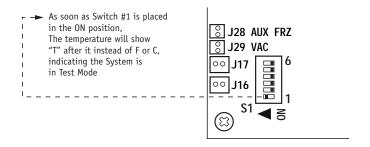
#### Read and understand these instructions before beginning this process.

Know the Setup Number you want before you power up the spa and wait to power up the spa until you're ready to change the Setup Number.

The system must be in Test Mode, so move Switch 1 to the ON position. The Test Menu will then be available.

Power up the spa, and press any button once to Link the panel. (Note: Switch 1 can be moved to the ON position immediately after power-up, if preferred - Danger! High Voltage will be present!)

**You will have 1 minute** to complete the setup change after you manually exit Priming Mode. (Once familiar with the process, the Setup change should take less than 15 seconds.)



#### DANGER! HIGH VOLTAGE WILL BE ACCESSIBLE! SERVICE TECHNICIAN ONLY!

Move DIP Switch 1 (on S1 on the Logic circuit board) to ON.

The system will enter Test Mode.

Moving DIP Switch 1 to OFF will exit Test Mode.



When the panel displays RUN PMPS PURG AIR, press any Temperature button ONCE to exit Priming Mode. You should see "---T" where the T indicates the system is in Test Mode.



Continued on Next Page.



## **Setup Changes - Continued**

Again, You will have 1 minute to complete the setup change after you manually exit Priming Mode.

Immediately after exiting Priming Mode, press this sequence of buttons: Warm\*, Light, Warm, Warm, Warm, Warm. Continue to press Warm until the diplay shows the Setup Number (S-01, S-02, etc.) you want to switch to. When the correct setup number is showing, press Light once, and the system will reset, using the newly-selected Setup from that point on.

Key

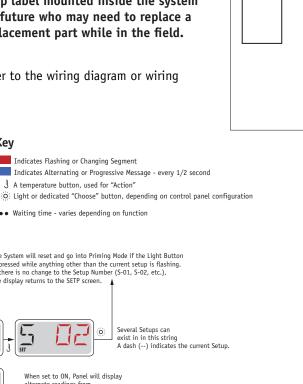
Indicates Flashing or Changing Segment

∃ A temperature button, used for "Action"

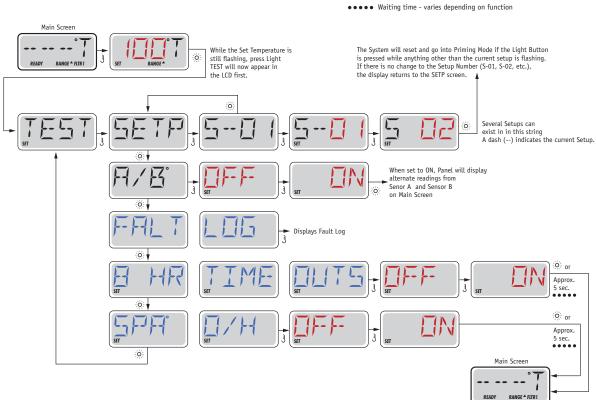
Move DIP Switch 1 to the OFF position to take the spa out of Test Mode. °F or °C will replace °T.

Using a permanent marker, write the Setup number on the Setup label mounted inside the system lid (right). This is very important to any service person in the future who may need to replace a circuit board or system and needs to change the Setup on a replacement part while in the field.

NOTE: Changing the Setup may require wiring changes as well - refer to the wiring diagram or wiring diagram addendum.



THIS SYSTEM IS CONFIGURED AS SETUP #



\*If the Control Panel does not have a Warm (Up) button, but rather a single Temp button, use the Temp button in place of the Warm button in the instruction above. (The flow chart assumes a single Temperature Button.)



#### **General Features**

Feature	Default
Pump 1 in Filter Cycle (Circ Only)	No
Pump 1 Low Timer	120 Minutes
General Pump Timer	15 Minutes
Blower Timer	15 Minutes
Mister Timer (N/A)	15 Minutes
Light Timer	240 Minutes
Circ	Like P1 Low

Cleanup Cycle 30 Minutes

Cleaup as Preference setting Yes
Ozone Always
Ozone Suppression OFF

Pump Purge 60 Seconds
Blower Purge 30 Seconds
Mister Purge (N/A) 5 Seconds



#### **Temperature Features**

### Feature Default

Temperature Display

All temperatures must be specified in °F. The system converts °F to °C dynamically. If Celsius is required for default settings, choose a desired °C value that (after rounding) corresponds to a Fahrenheit value.

°C	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
°F	39	41	43	45	46	48	50	52	54	55	<i>57</i>	59	61	63	64	66	68	70	72
°C	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
°F	73	75	77	79	81	82	84	86	88	90	91	93	95	97	99	100	102	104	

Hi-Range Min. Set Temp	80°F
Hi-Range Max. Set Temp	104°F
Hi-Range Default Temp*	100°F
Lo-Range Min. Set Temp	50°F
Lo-Range Max. Set Temp	99°F
Lo-Range Default Temp*	70°F
Freeze Threshold	44°F

Temp Lock Type Temp + Settings

### Time Features

Light Cycle Start Hour\*

Light Cycle Duration\*

Feature	Default
Time Format*	12 Hour
Filter 1 Start Hour*	8:00 PM (20:00)
Filter 1 Duration*	2 Hours
Filter Cycle 2 Default*	OFF
Filter 2 Start Hour*	8:00 AM (08:00)
Filter 2 Duration*	15 Minutes
Light Cycle	Disabled
Light Cycle Default*	OFF



9:00 PM (21:00)

15 Minutes

<sup>\*</sup>May be changed by end-user (if Enabled)

#### **Reminder Features**

Feature	Default				
Reminders Shown*	Yes				
Check pH	0FF				
Check Sanitizer	<i>OFF</i>				
Clean Filter	30 Days				
Test GFCI	65 Days				
Drain Water	100 Days				
Change Cartridge	OFF				
Clean Cover	<i>OFF</i>				
Treat Wood	<i>OFF</i>				
Change Filter	365 Days				

### **Special Features**

Feature	Default
Special Amperage Rule 1	No Limitation
Special Amperage Rule 2	No Limitation

Drain Mode Disabled
Demo Mode Disabled
Automatic GFCI Test Disabled

Ozone Slaved to Heater Pump Yes



<sup>\*</sup>Editable by end-user

### **Main Control Panel Features**

Feature	Default
Button 1	Jets 1
Button 2	Jets 2
Button 3	Flip
Button 4	Up
Button 5	Light 1
Button 6	Down

Jets 1	
Jets 2	
Light 1	
Heat ON	
	Jets 2 Light 1

#### **TP600**

55673-03



#### Download the User Interface and Programming Guide here:

http://service.balboa-instruments.com/zz40940\_download.zip

Blue Indicates New Custom Configuration Default (Setup 1)



Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2, Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending. All material copyright of Balboa Water Group.

### **Auxilliary Panel Features**

Feature	Default
Aux Button A1	Jets 1
Aux Button A2	Jets 2
Aux Button A3	Unused
Aux Button A4	Light

AX10 A1	No O/L	52803	AUX
AX10 A2	AUX O/L	55919	
AX10 A3	No O/L	52805	
AX10 A4	No O/L	52806	
AX20 A1A2	No O/L	52800	A1 A2, 3 or 4
AX20 A1A3	No O/L	52801	
AX20 A1A4	No O/L	52802	
AX40	No O/L	52799	A1 A2 A3 A4

